

REMARKS

The abstract has been amended as requested by the Examiner. The informality on page 12 of the specification has also been corrected. Entry of these amendments is respectfully requested.

Claim Rejections - 35 U.S.C. § 102

The rejection of claims 1-8 as being clearly anticipated by EP 0 048 508 A2 (Figs. 6 and 7) is respectfully traversed.

In the subject Office action it is stated that Applicant's arguments have been fully considered. However, one of Applicant's key arguments is not even addressed in the Office action. It is believed that appropriate consideration of this argument will result in allowance of the claims.

In Applicant's previous response it was pointed out that an important distinction between the presently claimed apparatus and that disclosed in Figs. 6 & 7 of EP 0 048 508 A2, is that many of the primary separation chambers 63 in Figs. 6 & 7 (especially those close to the circumference of the column wall), are not completely surrounded by skirts 72. (This is particularly evident in Fig. 7 of the reference where gaps are shown between the column wall 62 and primary separating chambers 63 and skirts 72.) As a consequence, the secondary gas leaving these primary separation chambers will not flow downwardly, but rather will flow laterally and upwardly.

The Examiner appears to have ignored this important fact in the Office action, which assumes that as a result of skirts (72), all of the liquid-enriched secondary gas will flow downwardly, and that this will result in substantial separation of the heavier entrained liquid from the lighter secondary gas stream. This position is untenable for several reasons. One reason is that discussed above, i.e., many of the primary separation chambers are not completely surrounded by skirts (72). Therefore, much of the liquid-enriched secondary gas from these chambers will not flow downwardly at all, but will flow upwardly through secondary gas outlet tubes 69 without any separation of entrained liquid.

It is stated in the reference that the purpose of the skirts 72 is to prevent the liquid discharges from primary separation chambers 63 from hampering the liquid discharge from adjacent chambers. (Page 9, line 33 to page 10, line 3). Since the purpose of the skirts is to prevent the liquid discharge from one primary separation chamber from interfering with the discharge from an adjacent chamber, there is no need to have skirts in areas where there are no adjacent chambers, such as the area around the circumference of the column.

Even if some of the fluid-enriched liquid does flow downwardly because of skirts 72, it would be unreasonable to assume that substantial separation of the entrained liquid from the secondary gas will necessarily result. The degree of separation is influenced not only by the presence or absence of skirts 72, but other factors as well, such as flow velocities that are low enough to allow liquid entrained in the gas to coalesce and settle. (See the discussion on page 11, lines 20-31 of the present specification.) For this reason one cannot assume that there would be any substantial separation of entrained liquid from the secondary gas merely because some of the secondary gas passes around the lower ends of skirts 72. Such an assumption is also contrary to the disclosure on page 10, lines 15-17 of the reference, that the gas flowing through the secondary gas outlet tubes 69 contains entrained liquid. The concept of utilizing the space between the primary separation chambers as a secondary separation zone is totally lacking in the reference and would not happen inherently for the reasons discussed above.

Contrary to the statement on page 4 of the Office action, Applicant has not “apparently decided to ignore the disclosure at page 10, lines 3-5, wherein it is specifically stated that the lower ends of the skirts (72) extend below the lower ends of the openings (67) in the walls (64) of separators (61).” Applicant acknowledges that for those primary chambers completely surrounded by skirts 72, there will at least initially be some downward flow of secondary gas before the secondary gas flows upward through secondary gas outlet tubes 69. However, as discussed above, many of the primary separation chambers are not surrounded by skirts. So as to those chambers there is no downward flow. As to the chambers which are completely surrounded with skirts, there is no indication that substantial separation of entrained liquid and gas will occur as a result of the flow around the lower ends of skirts. The reference certainly does not teach or suggest there is any such substantial separation, nor would it necessarily happen inherently for the reasons discussed above.

Applicant takes exception to the statement in the Office action that “Applicant’s arguments are based solely on a misreading of EP 0 048 508 A2.” Applicant’s argument that the reference does not teach or suggest separation of entrained liquid from the secondary gas is not based solely on the statement on page 10, that “Gas, entrained by the liquid leaving the separating chambers 63, will flow in upward direction through the secondary gas outlet tubes 69”.

As discussed above, Applicant’s argument is primarily based on the fact that many of the primary separating chambers in Figs. 6 & 7 are not completely surrounded by skirts. Therefore, the flow of secondary gas from these primary chambers will not be downward.

Applicant submits the quoted disclosure on page 10 of the reference is significant for its teaching that the gas leaving separating chambers 63 and flowing through the secondary gas outlet tubes 69 is entrained by liquid. If the tortuous path of the secondary gas around the lower

end of skirt means (72) and upwardly toward the secondary gas outlet means (69) inherently resulted in the substantial separation of the heavier entrained liquid from the lighter secondary gas, there would be no entrained liquid in the gas flowing through the secondary gas outlet tubes. The fact the reference discloses that the gas flowing through the secondary gas outlet tubes 69 contains entrained liquid is further evidence that the reference does contemplate, nor inherently result in, the separation of the entrained liquid in from the secondary gas in outer space (70).

In marked contrast, with the present invention it is possible to obtain a secondary gas that is sufficiently free of entrained liquid that further secondary separation above the upper wall of the separation tray is not required, resulting in a more compact and simpler arrangement. (Specification, page 5, line 29 to page 6, line 4). When the disclosure of EP 0 048 508 A2 is considered as a whole, it does not teach or suggest the invention recited in the present claims.

In summary, the principal limitation being relied to distinguish claims 1-8 over EP 0 048 508 (Figs. 6 & 7) is the limitation in claim 1: "wherein the means for removing and guiding liquid-enriched fluid is arranged to admit all liquid-enriched fluid downwardly into the free inner space". As discussed above, in the apparatus depicted in Figs. 6 & 7 of EP 0 048 508 A2, at best only some of the liquid-enriched fluid may be inherently directed downwardly into outer space (70) by skirts (72) before flowing upwardly through secondary gas outlet tubes (69). Since the many of separating chambers in Fig. 7 are not completely surrounded by a skirt, all of the liquid-enriched fluid would not flow downwardly into outer space (70). Hence, the subject matter of claims 1-8 is not anticipated Figs. 6 & 7 of EP 0 048 508 A2. Accordingly, the rejection of these claims under 35 U.S.C. 102 should be withdrawn, which action is respectfully requested.

Claim Rejections - 35 U.S.C. § 103

The rejection of claims 9-14 under 35 U.S.C. § 103(a) as being unpatentable over EPO 0 048 508A2 taken together with Sheinman is respectfully traversed.

For the reasons discussed above, EPO 0 048 508A2 (Figs. 6 and 7) does not substantially disclose Applicant's invention as recited in claims 9-4.

More specifically, EP 0 048 508 A2 does not teach or suggest the limitation in the claim 1: "wherein the means for removing and guiding liquid- enriched fluid is arranged to admit all liquid-enriched fluid downwardly into the free inner space". Since claims 9-14 are dependent claims, which directly or indirectly depend from claim 1 and contain the limitations of claim 1, the subject matter of claims 9-14 is not obvious from the primary reference.


Sheinman, which concerns a heat-mass exchange system, adds nothing to overcome the deficiencies of the primary reference. While Sheinman may disclose some of the specific features recited in claims 9-14, Applicant is not relying on any of the specific features of claims

9-14 for patentability. Instead, Applicant is relying on the limitation discussed above, which clearly is not taught or suggested by either of the references. Accordingly, claims 9-14 are believed patentable over EPO 0 048 508A2 alone or in combination with Sheinman. Therefore, the rejection of these claims under U.S.C § 103(a) should be withdrawn.

Since all of the claims 1-14 of the present application are patentable over the cited references for the reasons discussed above, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
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